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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/842,373	04/26/2001	Floribertus C.H. Mokveld	P 280261 9036US/CNT1	6577

43569 7590 03/25/2005

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EXAMINER	
SALVATORE, LYNDA	
ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 03/25/2005

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/842,373
Filing Date: April 26, 2001
Appellant(s): MOKVELD ET AL.

Richard Steinberg
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 1st, 2005.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(7) Prior Art of Record

Published International Application: WO 97/00766 Van der loo et al.,- 01-1997

Japanese Patent:(translated) JP 360151311A Nanri et al., - 08-1985

5,035,11	Hogenboom et al	07-1991
5,225,241	Dischler	07-1993

" Ballistic Materials and Penetration Mechanics" Methods and Phenomena: Their Applications in Science and Technology, vol5, (1980).

(8) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 11-14 and 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van der loo et al., WO 97/00766 in view of Nanri et al., JP 360151311A.

The published PCT application to Van der loo et al., is directed to a ballistic-resistant moulded article comprising a compressed stack of single layers. The layers consist of unidirectionally oriented reinforcing fibers and about 30 weight percent of a plastic matrix material (Abstract). The moulded ballistic-resistant article preferably has a specific energy absorption rating of at least 120 J/kg/m^2 (Page 2, 27-28). Preferably, the reinforcing fibers are made from ultra-high molecular weight polyethylene with a denier per filament greater than or equal to 1.5, have intrinsic viscosity of at least 5 dl/g and tensile modulus of at least 1000 cN/dtex (Page 6, 16-25). Van der loo et al., further discloses that the ballistic-resistant moulded article is preferably compressed at a pressure of at least 15 MPa. at a temperature ranging from 115 to 130°C (Page 9, lines 1-5 and Page 10, lines 7-12). The ballistic-resistant moulded material is suitable for use in helmets, bullet proof vests and panels (Abstract).

Van der loo et al., fails to disclose the preparation of the polyethylene filaments, however, the patent issued to Nanri et al., teaches a yarn having improved processing properties, frictional resistance, and wear resistance (Abstract). Said yarn is made from polyethylene having a liquid paraffin content ranging from .05 to 1.00 wt. percent (Claim 1). Nanri et al., discloses that the polyolefin yarn possesses a tensile strength of 30 (g/d) or more and an initial elasticity modulus of 800 (g/d) (Section 3, translated detailed description of the invention). Nanri et al., specifically teaches the novel polyethylene fibers have excellent resistance against friction and abrasion, have fineness, light weight, and strength properties not found in prior polyethylene fibers, which make them

especially adaptable for use in clothing, ropes and fishing nets (Section 3, translated detailed description of the invention).

Therefore, motivated to provide a shaped article having high tensile strength and modulus of elasticity it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the reinforcing fibers in the ballistic-resistant moulded article of Van der loo et al., with the high tensile strength and modulus of elasticity polyethylene fiber composition taught by Nanri et al.

With regard to claim 17, the method limitation of distributing the solvent on one or more of the fiber layers before compression is not given patentable weight at this time since it is not shown to materially effect the final product structure. In other words, it is the position of the Examiner that the method of how the solvent is provided with the shaped article (i.e., solvent present in the fiber composition or applied to the surface of the fiber layers) does not patentably distinguish the final shaped article product structure over the prior art. The burden is shifted to Applicant to evidence the contrary. See MPEP 2113

With regard to the chi-parameter limitation of less than .5 present in claim 22, said limitation is presumed to be inherent to the ballistic-resistant moulded article of Van der loo et al., and Nanri et al. Support for said presumption if found in the use of like materials such as polyethylene and non-volatile paraffin, which would result in the claimed chi-parameter property. The burden is shifted to Applicant to evidence the contrary. *In re Fitzgerald* 205 USPQ 594

In addition, the presently claimed chi-parameter of less than .5 would have obviously been present once the ballistic-resistant moulded article of Van der loo et al., and Nanri et al., is provided. *In re Best*, 195 USPQ at 433

(9) Response to Argument

Applicant asserts that there is no motivation to combine the prior art reference of Van der loo et al., in view of Nanri et al., to form the obviousness rejections set forth above. Specifically, Applicant contends that the low friction polyethylene fibers taught by Nanri et al., would not be suitable for use in ballistic materials. In support of this position, Applicant supplied two references which effectively teach that using low friction polyethylene fibers are not suitable in ballistic materials because they exhibit poor energy transfer resulting in loss of stopping efficiency. The Examiner has carefully considered Applicant's additional references, however, this argument is not found persuasive on the grounds that while the low frictional polyethylene fibers may be unsuitable for single layer or even multi-layer ballistic materials it does not sufficiently evidence that low frictional polyethylene fibers are not suitable for use in the moulded article comprising a *compressed* stack of single layers as taught by Van der loo et al. Particularly, Appellant's evidence isn't applicable to Van der loo et al., since Van der loo's material does not have the ability for the fibers to slide relative to each other and according to Appellant's evidentiary references, it is low sliding friction that results in Ballistic failure. Van der loo simply does not have the ability to exhibit fiber translation in muolded from and thus avoids the problem

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consist of unidirectionally oriented reinforcing fibers and about 30 weight percent of a plastic matrix material (Abstract). The moulded ballistic-resistant article preferably has a specific energy absorption rating of at least 120 J/kg/m^2 (Page 2, 27-28). Preferably, the reinforcing fibers are made from ultra-high molecular weight polyethylene with a denier per filament greater than or equal to 1.5, have intrinsic viscosity of at least 5 dl/g and tensile modulus of at least 1000 cN/dtex (Page 6, 16-25). Van der loo et al., further discloses that the ballistic-resistant moulded article is preferably compressed at a pressure of at least 15 MPa. at a temperature ranging from 115 to 130°C (Page 9, lines 1-5 and Page 10, lines 7-12). The ballistic-resistant moulded material is suitable for use in helmets, bullet proof vests and panels (Abstract).

Van der loo et al., fails to disclose the preparation of the polyethylene filaments, however, the patent issued to Nanri et al., teaches a yarn having improved processing properties, frictional resistance, and wear resistance (Abstract). Said yarn is made from polyethylene having a liquid paraffin content ranging from .05 to 1.00 wt. percent (Claim 1). Nanri et al., discloses that the polyolefin yarn possesses a tensile strength of 30 (g/d) or more and an initial elasticity modulus of 800 (g/d) (Section 3, translated detailed description of the invention). Nanri et al., specifically teaches the novel polyethylene fibers have excellent resistance against friction and abrasion, have fineness, light weight, and strength properties not found in prior polyethylene fibers, which make them especially adaptable for use in clothing, ropes and fishing nets (Section 3, translated detailed description of the invention).

As such, the Examiner maintains that the polyethylene fibers taught by Nanri et al., meet all of the chemical and/or physical property limitations (i.e., modulus tension

and tensile strength) and that the low friction property would not negatively affect the impact resistance properties of a moulded ballistic article comprising a *compressed* stack of single layers. Stated differently, it is the position of the Examiner that since the ballastic article in question comprises a moulded *compressed* stack of layers, any frictional properties would inherently be lost upon compression. Thus, having low or high frictional polyethylene fibers would not materially affect the final product structure since all the layers are *compressed* to form a moulded article.

With regard to Applicant's argument regarding the teaching by Nanri et al., to provide to flat fibers whereas the Van der loo et al., reference is directed to round fibers. The Examiner respectfully points out that the Nanri et al., reference was relied upon to teach the preparation of the polyethylene filaments. Applicant is not claiming any specific fiber shape or physical properties as a function of fiber shape. Applicant further argues that no motivation exists to employ the polyethylene filaments of Nanri et al., in the article of Van der loo et al., because the fibers of Van der loo et al., reference already exhibit desirable high tensile strength and modulus. In response, the Examiner respectfully points out that the fibers of Nanri et al., not only exhibit the claimed modulus and tensile strength but also have other properties such as light weight and fineness (Section 3, translated detailed description of the invention).

With regard to Applicant's argument regarding the use of liquid paraffin solvent by Nanri et al., to reduce the coefficient of friction, said argument is irrelevant. The Examiner is not arguing the relationship between liquid paraffin solvent and tensile strength or modulus elasticity. Moreover, Applicant's claims are not limited by the functionality of the liquid paraffin solvent, but rather that the liquid paraffin is present in

the claimed amount. In other words, it is the position of the Examiner that the reason why Nanri et al., uses liquid paraffin solvent is not relevant to the instant invention since fibers taught by Nanri et al., include all of the claimed chemical limitations and presently meets all of the physical property limitations.

Therefore, the Examiner maintains that sufficient motivation exists to form the reinforcing fibers in the ballistic-resistant moulded article of Van der loo et al., with the high tensile strength and modulus of elasticity polyethylene fiber composition taught by Nanri et al. Specific motivation to employ the liquid paraffin comprising polyethylene fibers taught by Nanir et al., is found in the combination of excellent resistance against friction and abrasion, fineness, light weight and strength properties which would be desirable in ballistic garments.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

ls
March 21, 2005

Conferees
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